

VHX_7000N

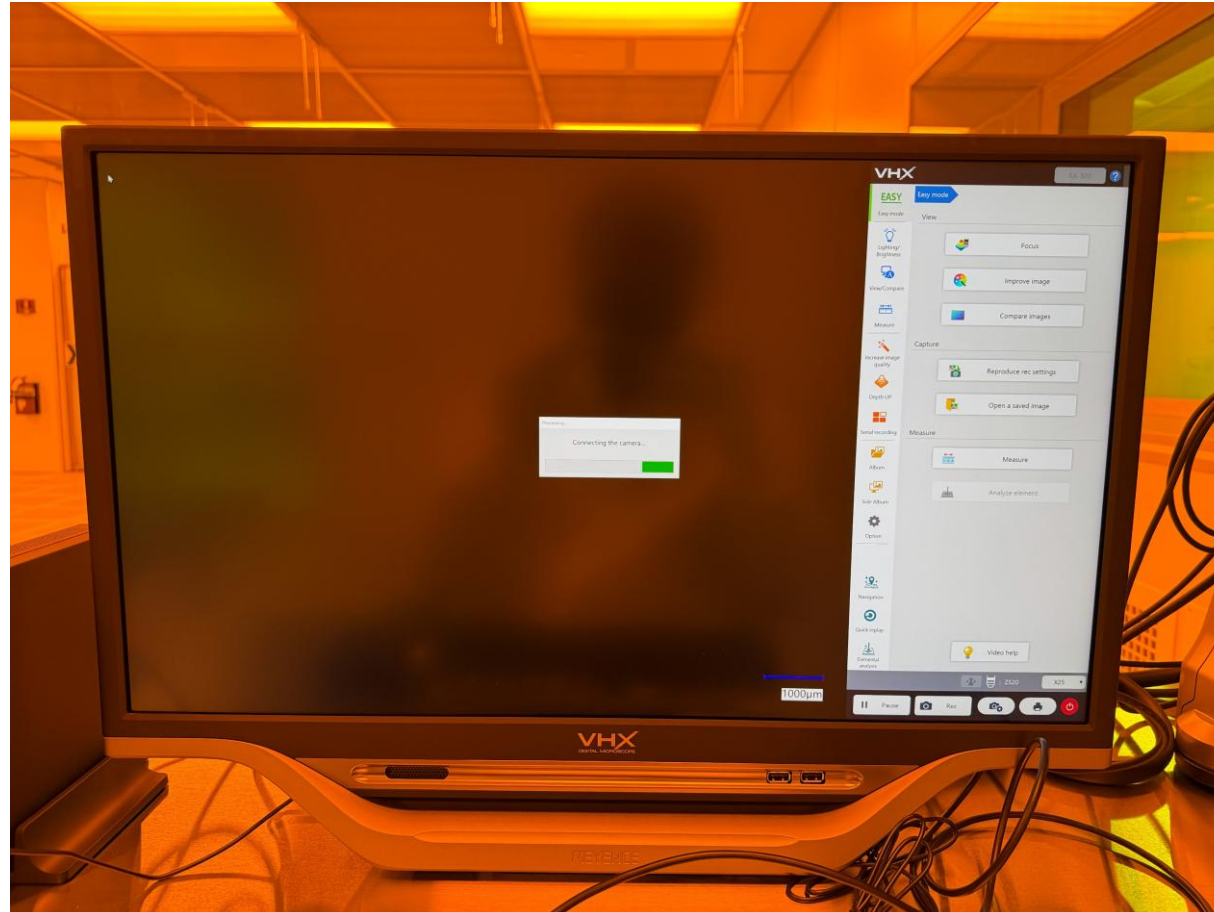


Opening the software

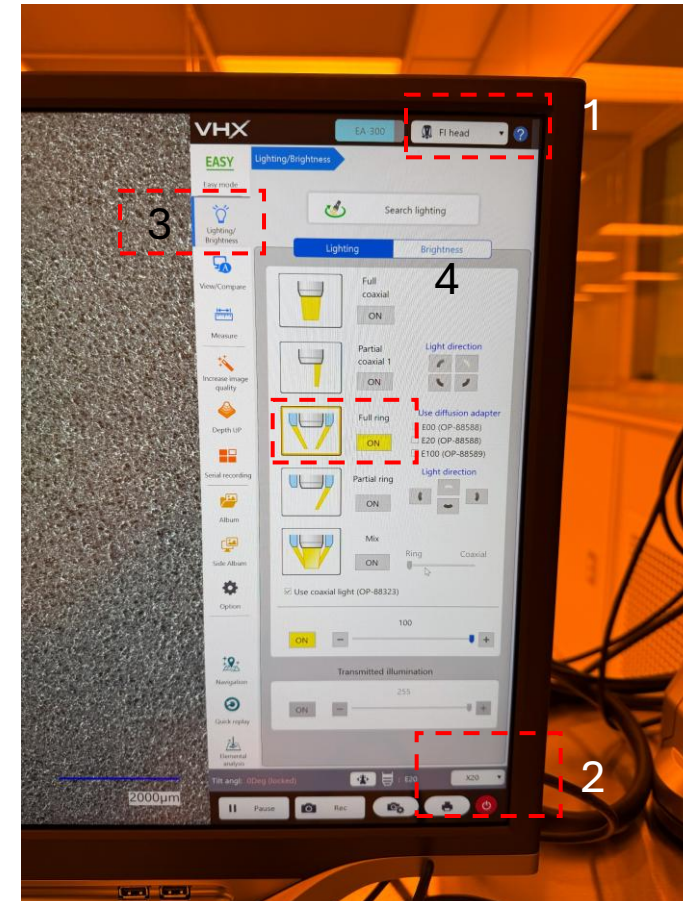


Wait for 3 – 5 mins before starting the software, the software takes 5 -10 seconds to open the app

It will take a minute to connect to the camera

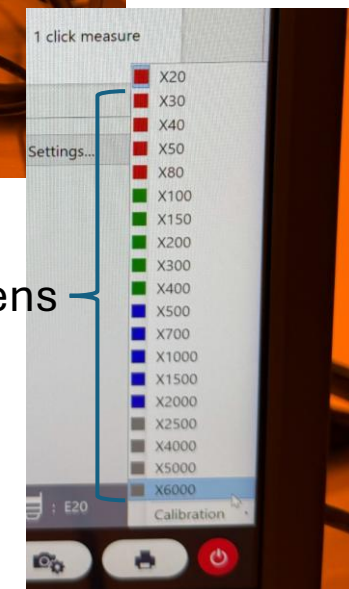
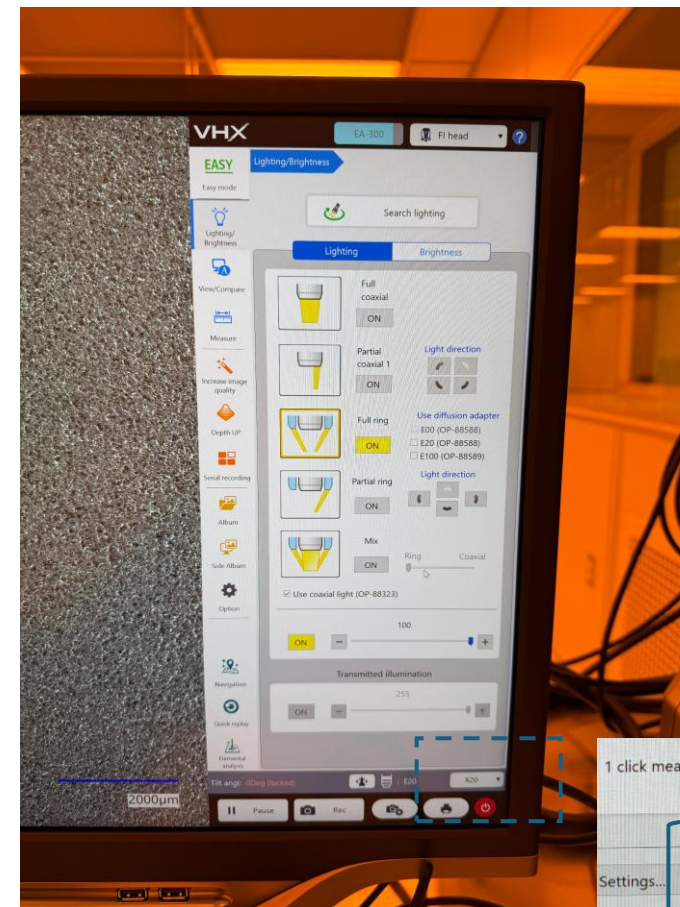


Check for objects on stage – the stage should be empty



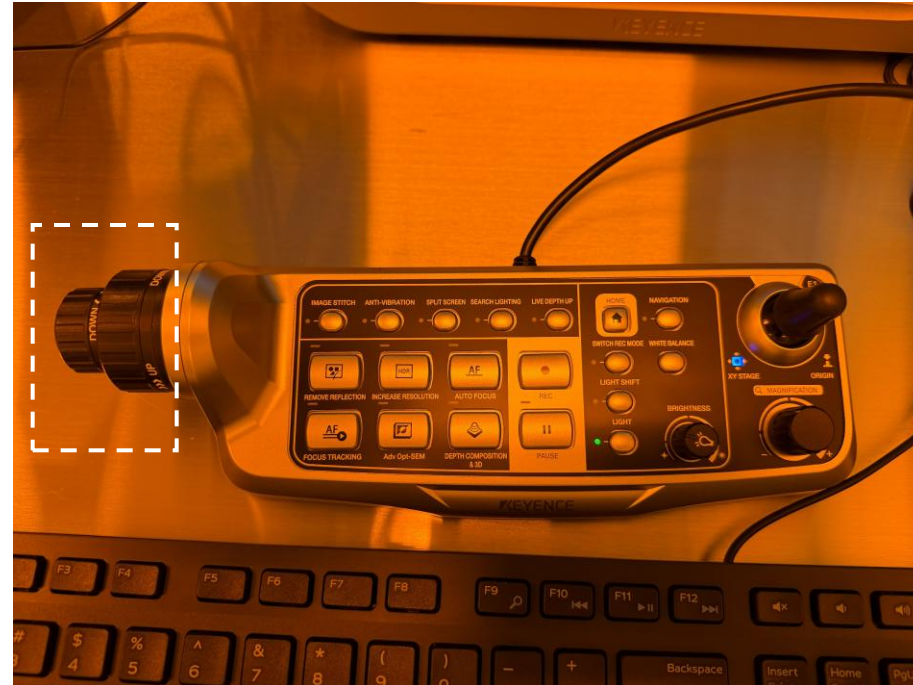
1. Start with 20X lens, be careful while operating the lens as it can be operated directly using the software
2. Click on F1 head, and lightning/ brightness to select the lightning type, we generally use full ring and click “on”

- Be careful while placing the sample between the lens and the stage, always start with 20x. The software automatically changes the lens, please be aware while changing the lens above 100x. It is clearly color coded while switching to a different lens



Different color indicates different lens

Focus the image using knobs on the control panel

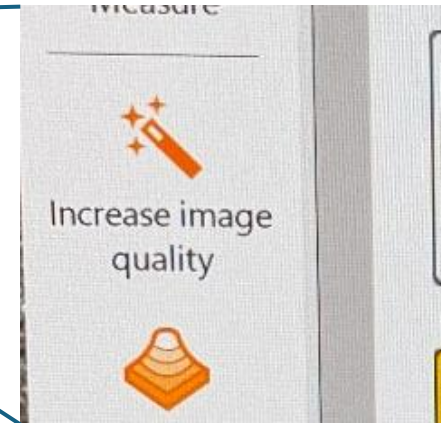
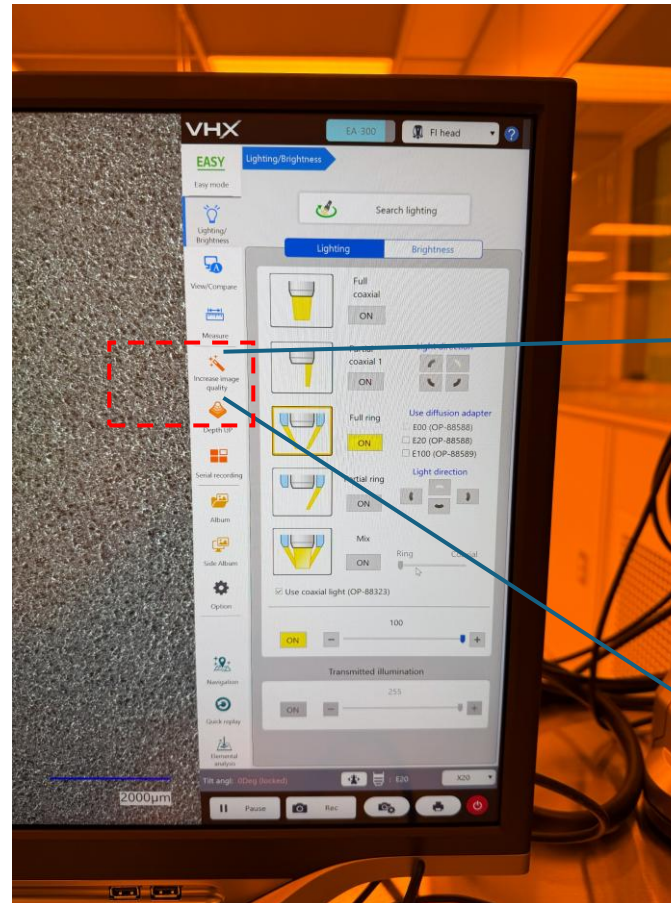


For XY movement, you can use the mouse

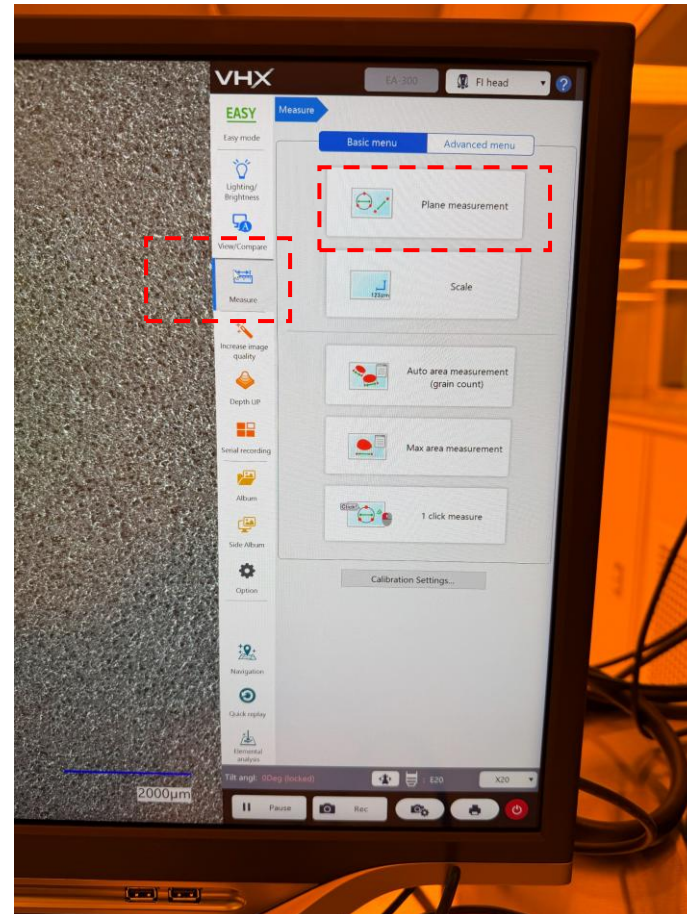
To acquire an image, click on record



Optimize image helps in selecting the best image of the available options

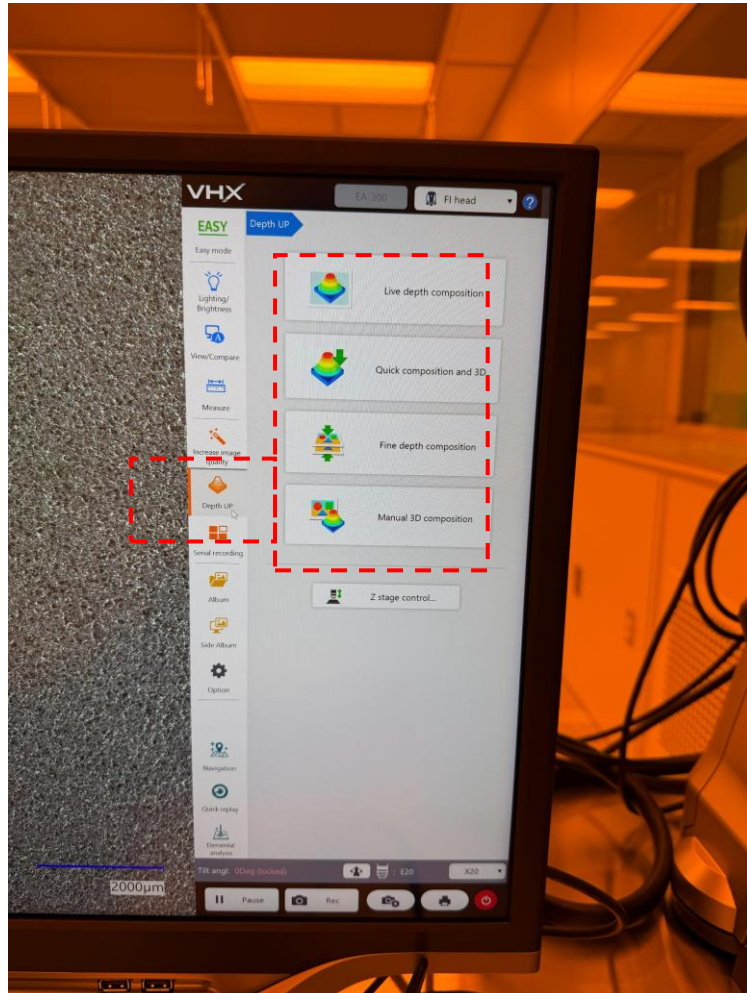


Measure option to measure, or add scale bar



To measure, click on measure,
and plane measurement

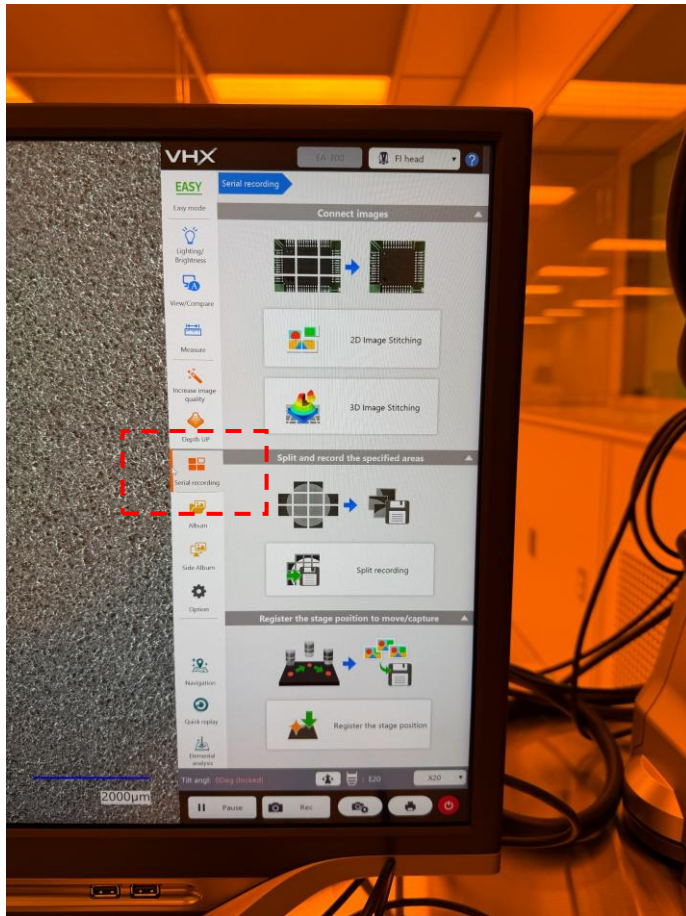
Depth up has features to study composition and provides 3D structure



Click on depth up to open this feature

- For quick composition and 3D, follow the guidelines
- For Fine depth composition, check pitch by clicking on settings
- Adjust pitch depending on the sample surface thickness
- For images, Click on start capture
- For all focus images, click “exec composition” for composing
- Save images as 2D and 3D
-

For stitching images



Click on serial recording for this feature

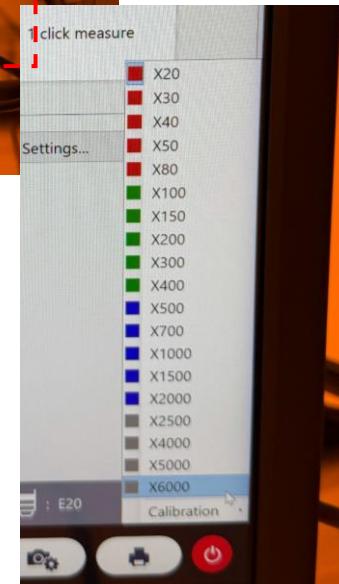
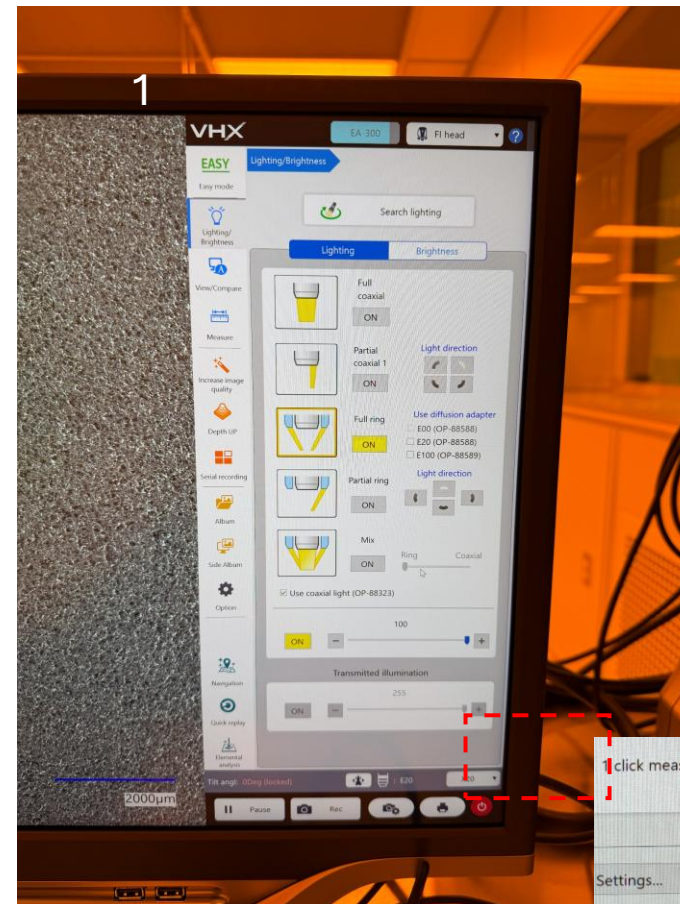
- Can stitch images at the center position, with number of specify
- Choose lower to upper limit, focus on lower limit and set lower and higher limit to set higher.
- Adjust pitch depending on the sample surface thickness
- For images, Click on start capture
- For all focus images, click “exec composition” for composing
- Save images as 2D and 3D, as needed

Save Data

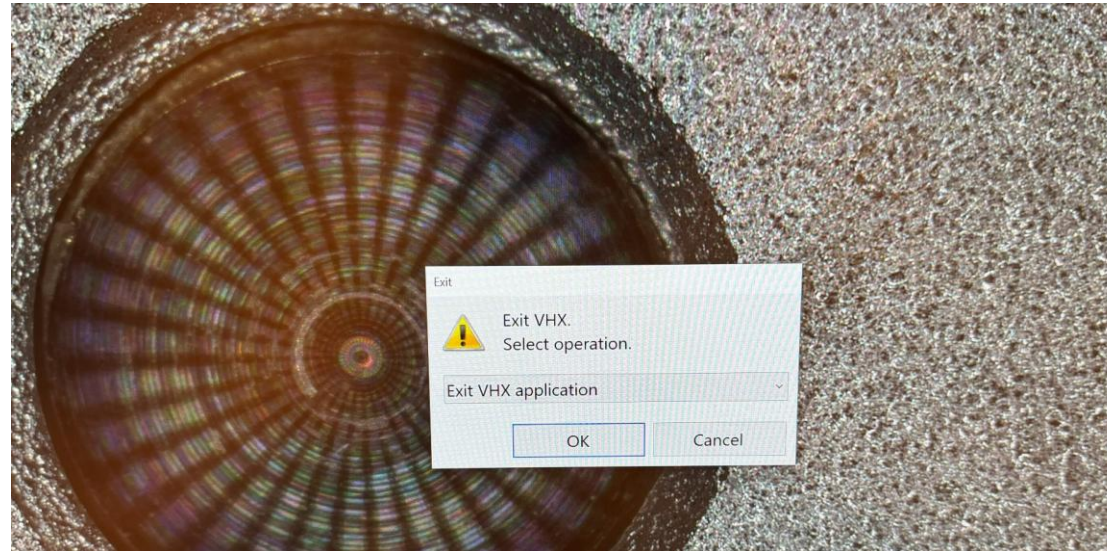
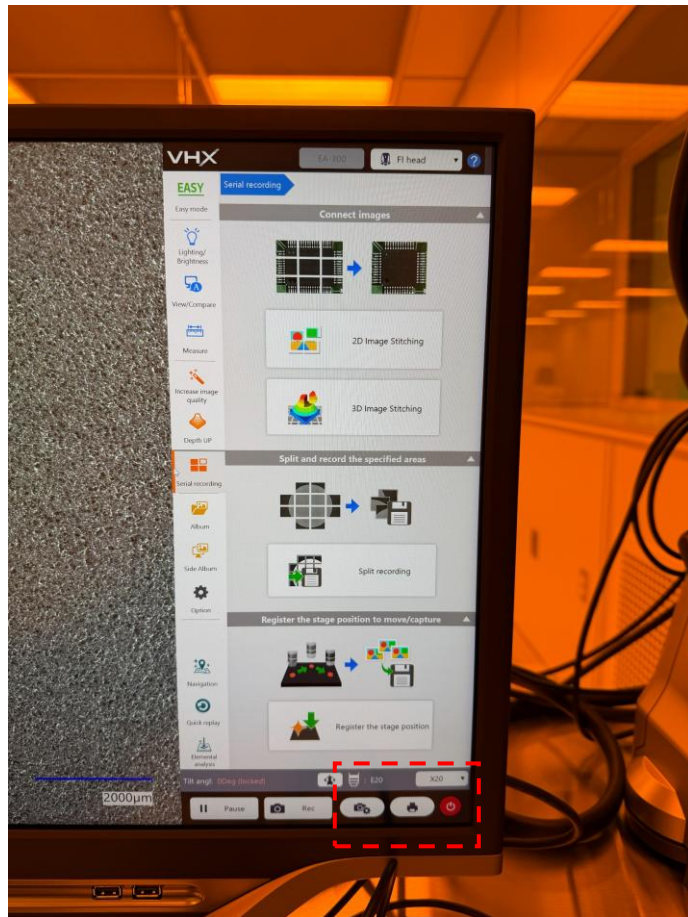
- Data can be saved in CSV format, image. Jpg, using recode, save and report.
- Make sure to save your data and transfer it to the Data share folder. Check in D:> Common Data> File name.

Closing

- Lift up the lens all the way to “20X” to get enough space between lens and stage for taking out the sample.
- Close the software

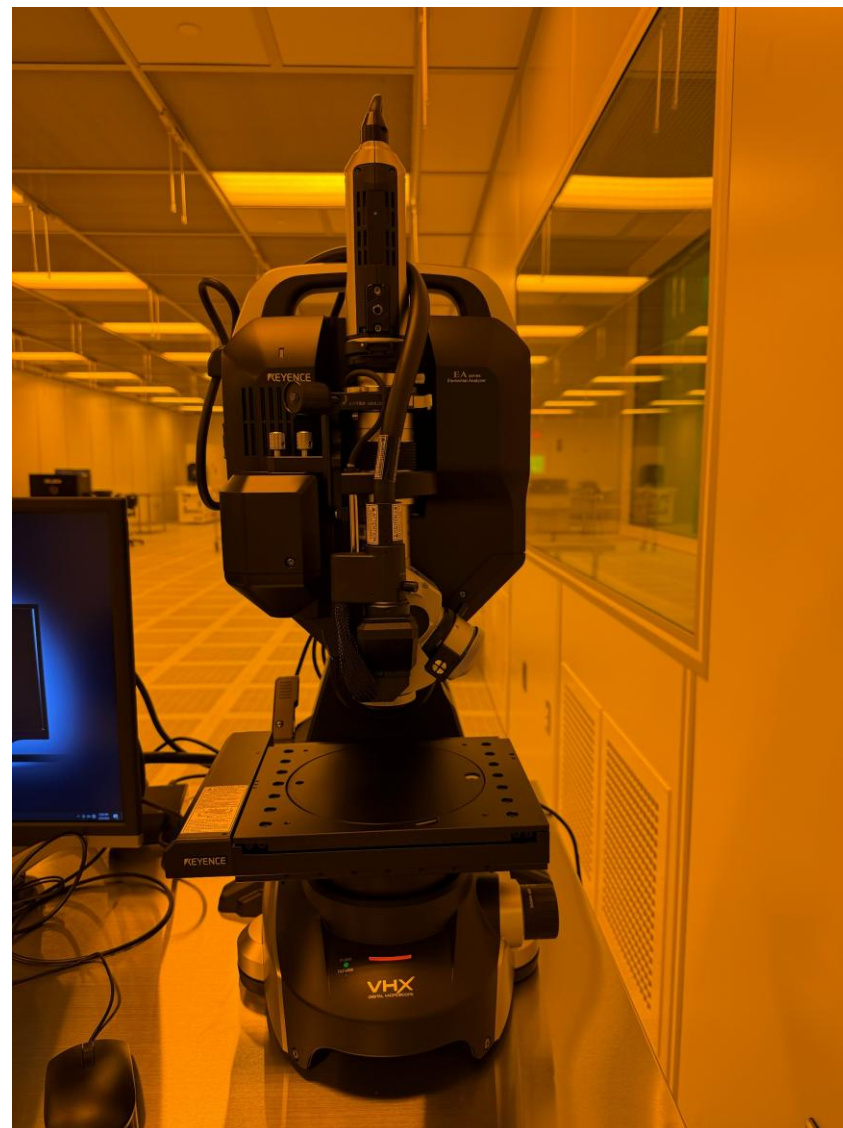


To close, click on power button and select exit VHX application



Go to next slide, if you want to use elemental analyzer

EA - 300

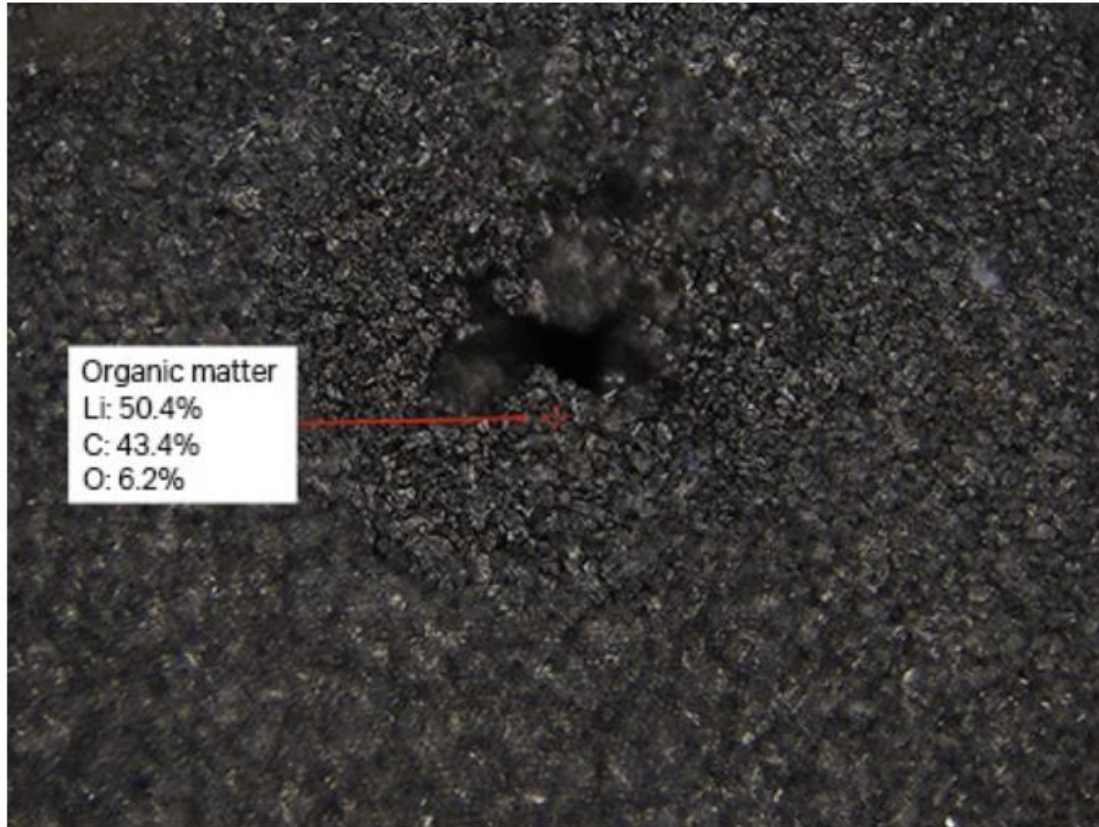


LIBs Laser induced breakdown spectroscopy (EA -300)

- Elements can be detected starting with light elements such as hydrogen (H) and lithium (Li).
- No vacuum or pre – processing required.
- spot diameter - 10 μm allows for analysis of microscopic samples.
- Liquids can be analysed.
- Elemental analysis can be performed deeper into the material by irradiating the sample with multiple pulses in sequence (using the drilling function).

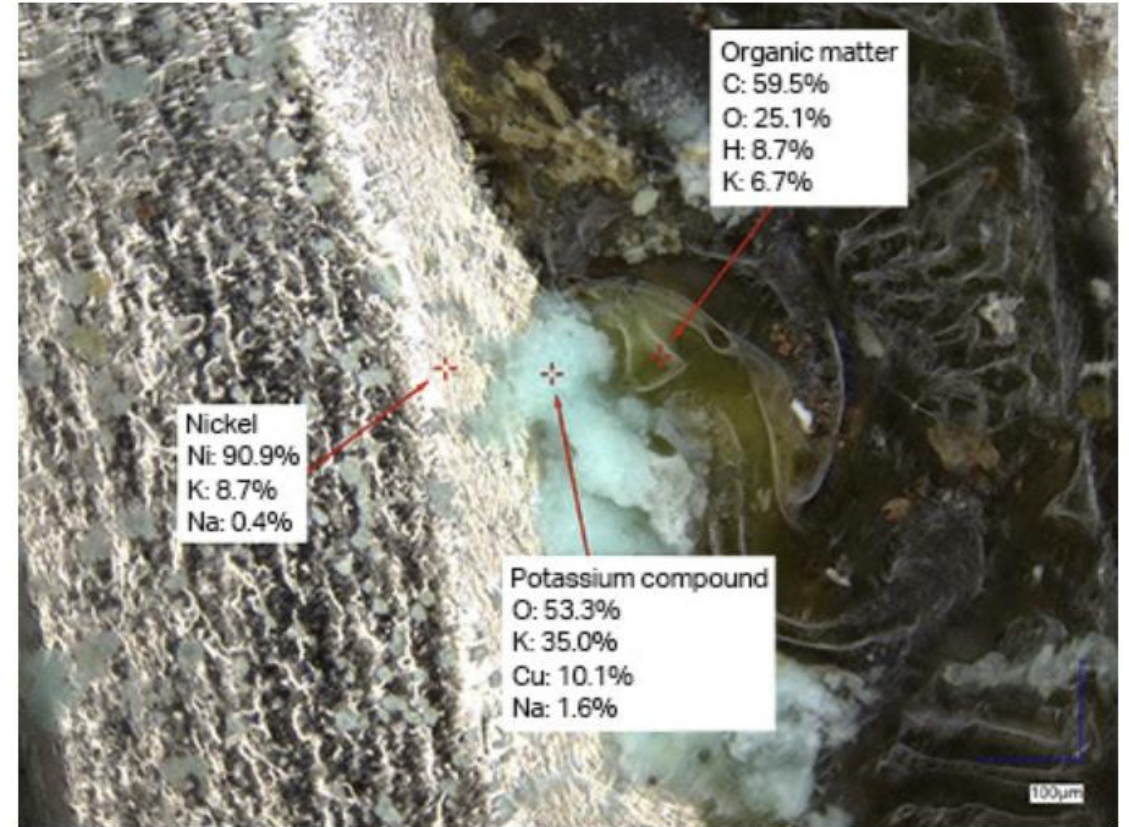
Examples in the battery industry

Lithium battery negative electrode analysis



The target does not have to be melted down to detect the light element lithium.

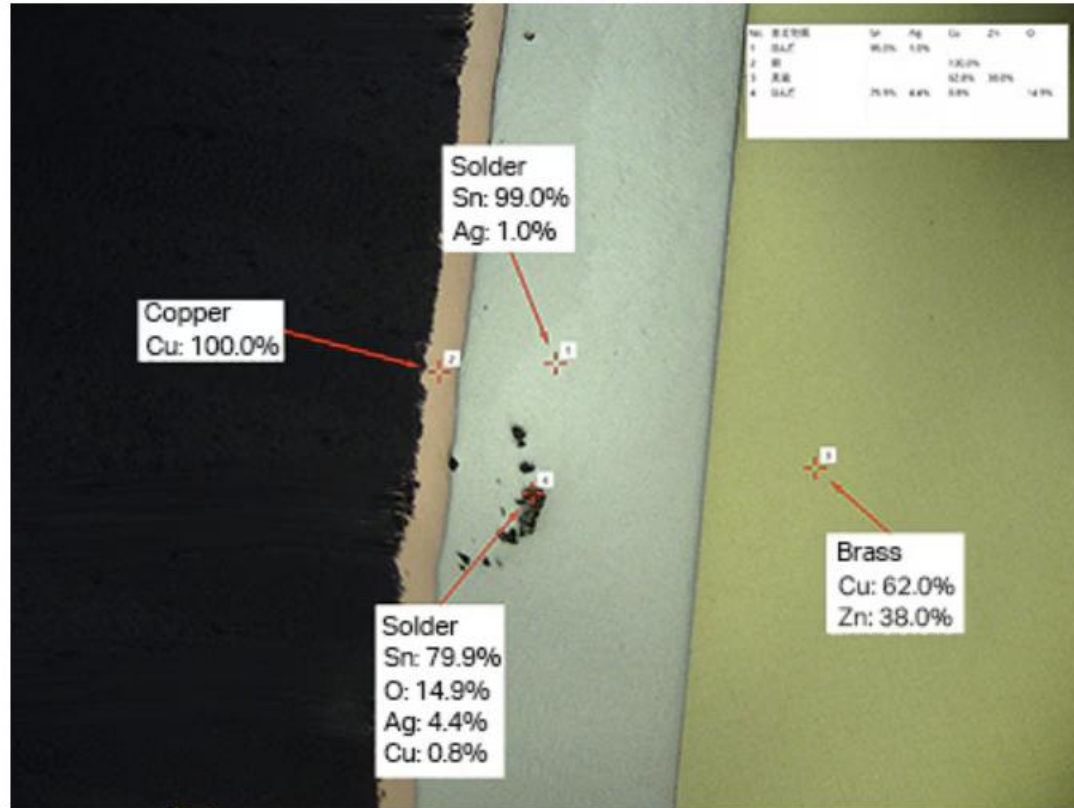
Battery fluid leakage and corrosion analysis



Eliminating the need to perform pre-processing saves a lot of time. Both liquids and powders can be analysed, and the inclusion of colour information results in reports that are visually easier to understand.

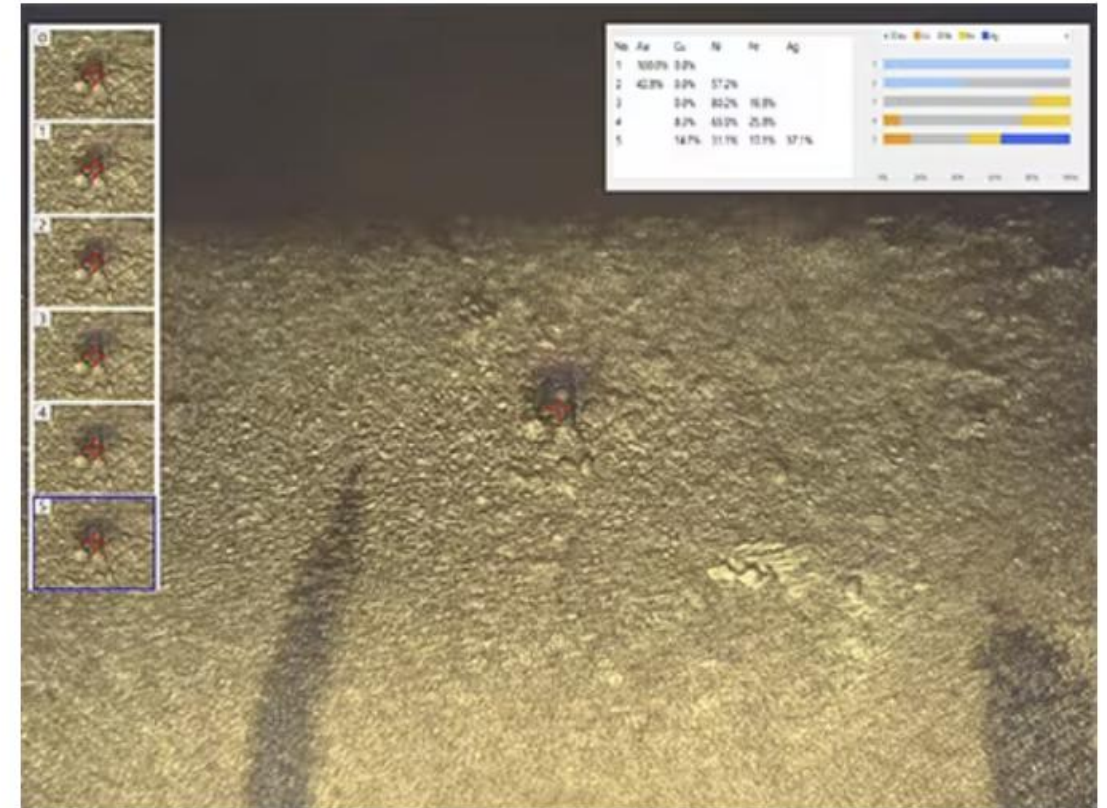
Examples in the plating industry

Plating cross section elemental analysis



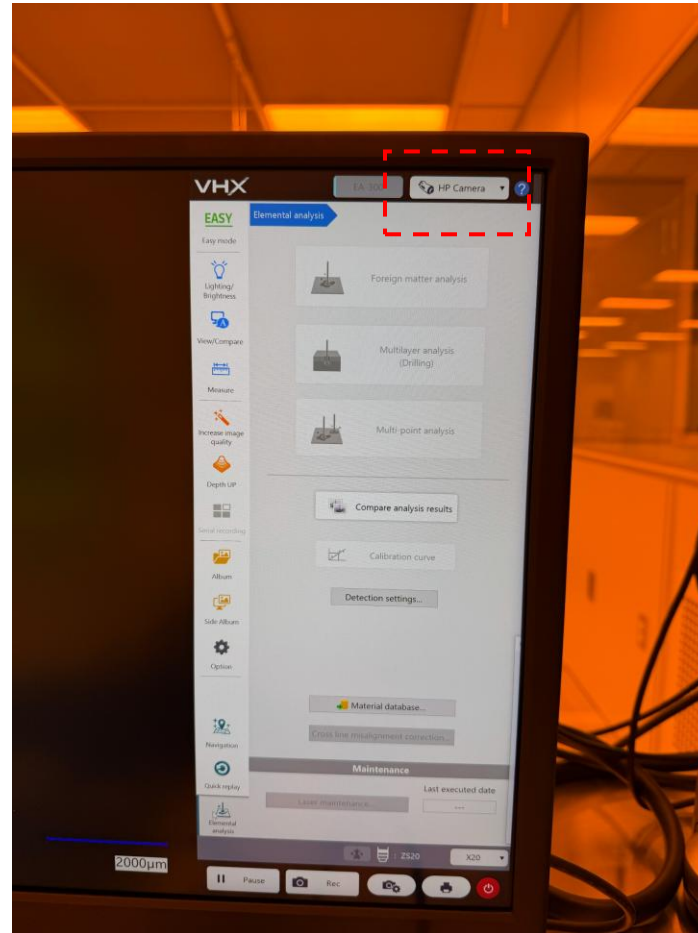
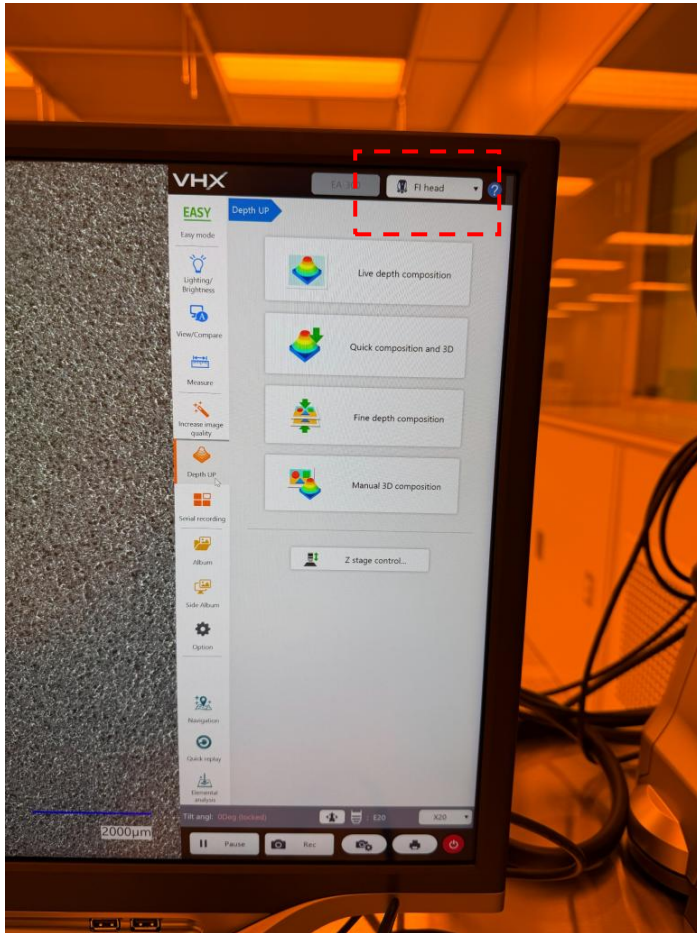
The short analysis time allows for an increased number of analyses.

Foreign particle analysis inside metal plating



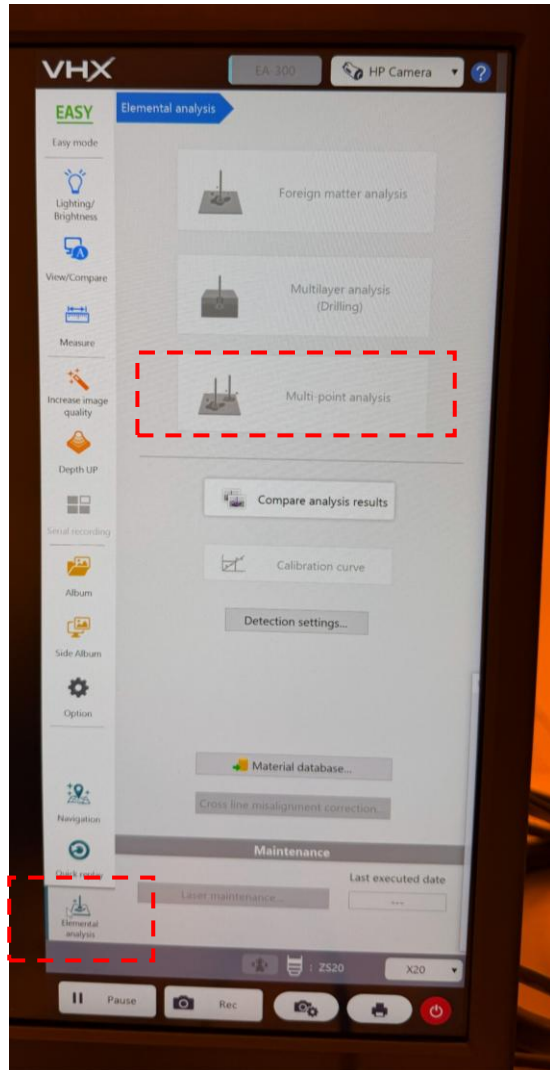
The drilling function allows for analysis of foreign particles inside plating.

To change to EA-300, click on arrow beside F1 head and change to HP camera



The colour on the instrument should change to blue/green

For elemental analysis



- Click elemental analysis, go to multi- point analysis and select point position
- Click execute in batch, and select laser power depending on sample hardness (Fober-weak, plastic-Normal, Metal-strong),
- Always start with low laser power to avoid sample damage
- Go to run analysis, and run the sample

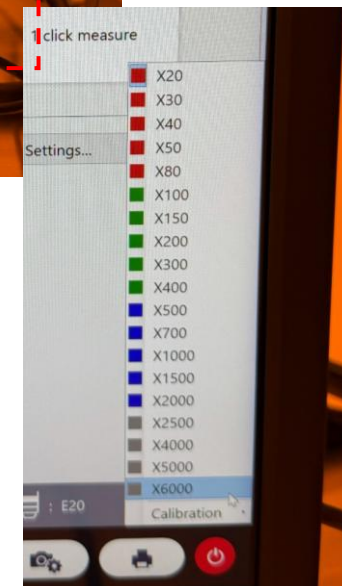
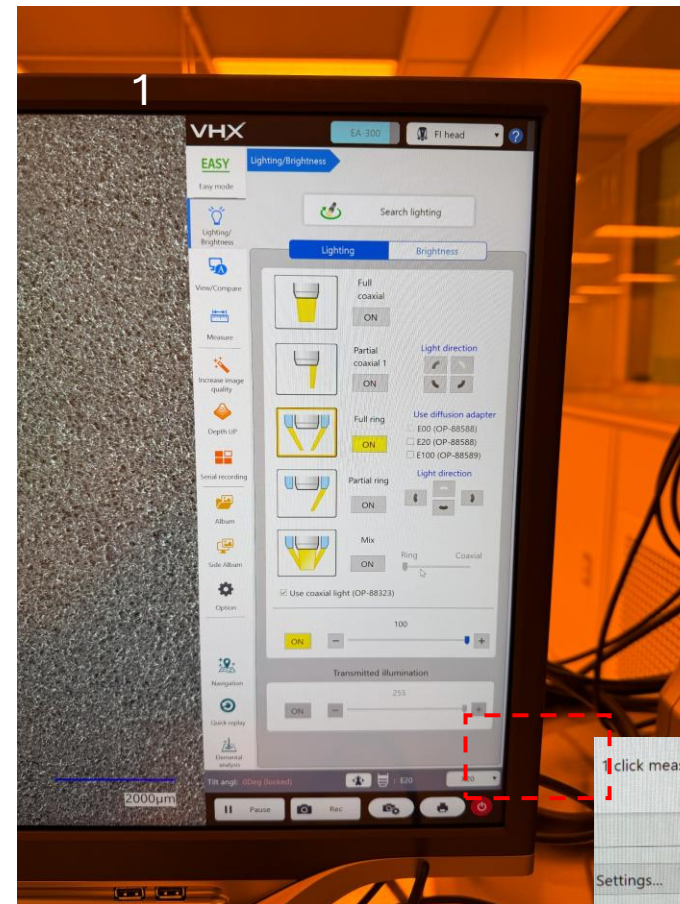
- Choose material to edit from table using edit material settings
- To get spectrum, click on spectrum and “+” to see details of each element

Save Data

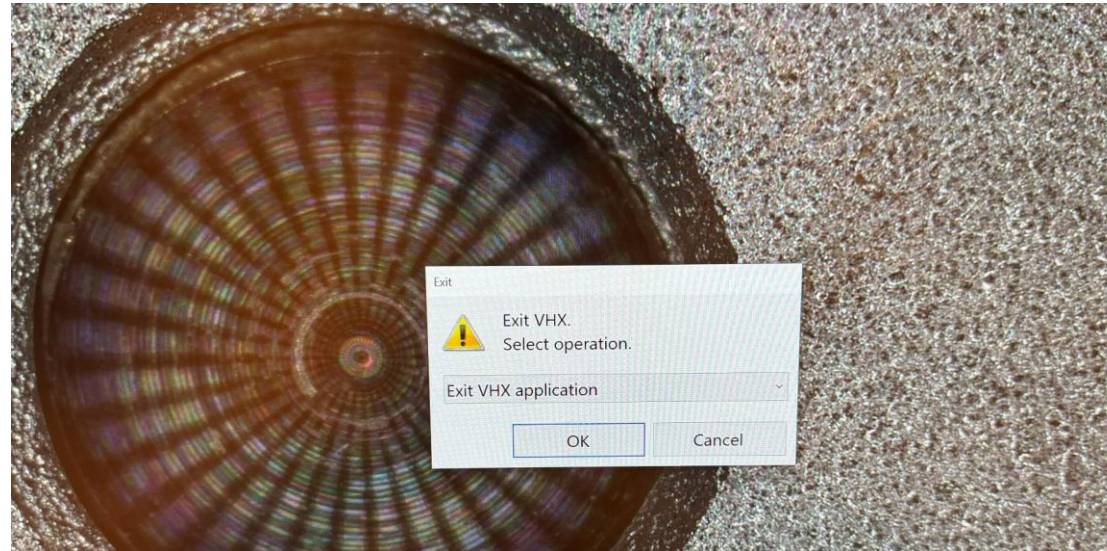
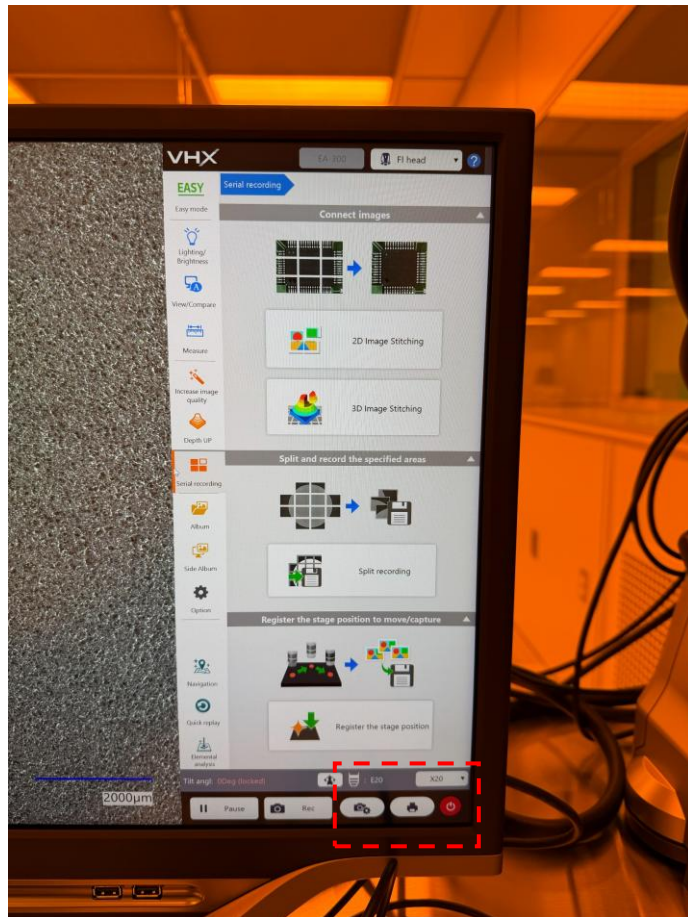
- Data can be saved in CSV format, image. Jpg, using recode, save and report.
- Make sure to save your data and transfer it to the Data share folder. Check in D:> Common Data> File name.

Lift up lens after use

- Lift up the lens all the way to “20X” to get enough space between lens and stage for taking out the sample.
- Close the software



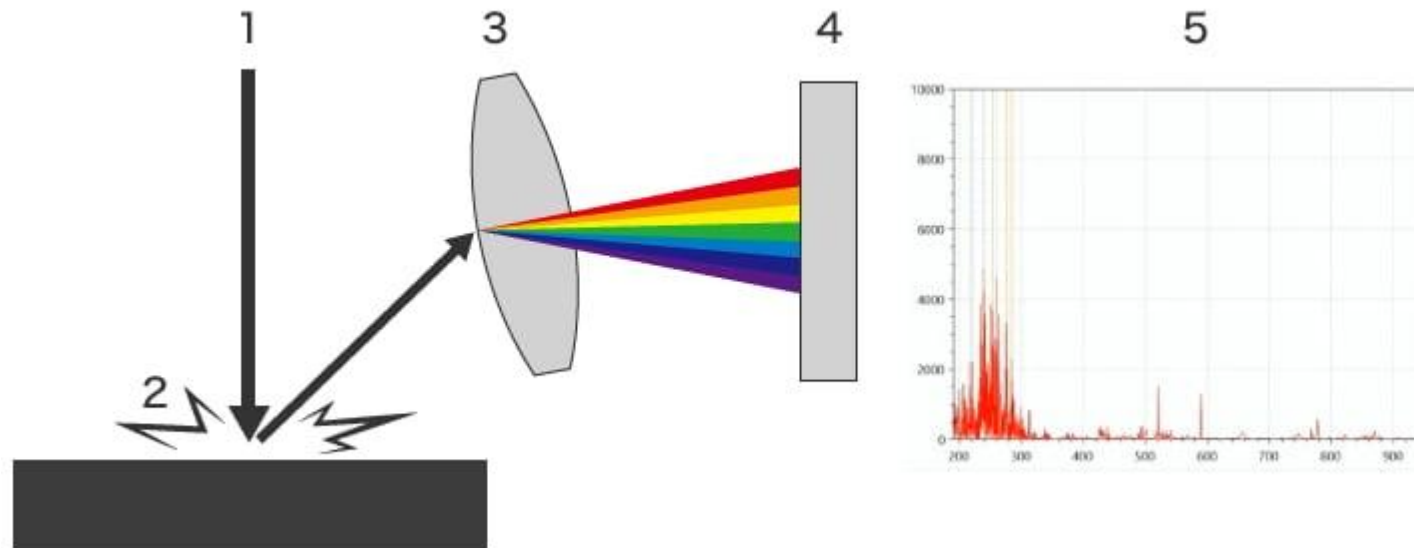
To close, click on power button and select exit VHX application



Go to next slide, if you want to use elemental analyzer

Operating technique

1. The pulse laser irradiates the sample.
2. Light is emitted by the plasma on the sample surface.
3. The light emitted by the plasma is split into wavelengths by a spectrometer.
4. The detector collects the intensity of each wavelength.
5. Spectra are obtained from intensity data, and the ratios of contained elements are calculated.



More about this

- LIBS is an abbreviation for Laser Induced Breakdown Spectroscopy. It is an elemental analysis method in which a pulse laser irradiates the sample. The wavelengths of the generated plasma are split by a spectrometer, and then the light intensity of each wavelength is analysed to identify the contained elemental components.
This analysis method has also been used during NASA's investigations on Mars and allows for vacuum-free elemental analysis.